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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/431,996	11/02/1999	KRISHNA BALACHANDRAN	BAL-7/LUC-11	9491

32205 7590 11/04/2002

GROSSMAN, PATTI & BRILL
ONE NORTH LASALLE STREET
44TH FLOOR
CHICAGO, IL 60602

EXAMINER	
AHN, SAM K	
ART UNIT	**PAPER NUMBER**
2634	

DATE MAILED: 11/04/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/431,996	Applicant(s) BALACHANDRAN ET AL.	
	Examiner Sam K Ahn	Art Unit 2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 November 1999* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,8-11,13-17,19-22,25,26 and 30-41* is/are rejected.

7)☒ Claim(s) *6,7,12,18,23,24,27-29 and 42-44* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 November 1999* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *4* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a) because they fail to show all the component numbers in Fig.6A, Fig.6B and Fig.7 as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims **1-4, 9-11, 13-17, 19-21** and **30-31** are rejected under 35 U.S.C. 102(e) as being anticipated by Schramm et al. (`663).

Regarding claims **1** and **13**, Schramm teaches a wireless communication system (21 of Fig.3) being capable of supporting link adaptation. Link adaptation is defined as described by the applicant on page 3, lines 6-7 as the dynamic selection of modulation and coding schemes based on radio link quality. Schramm discloses, in the abstract, a communication system supporting multiple modulations and supporting the schemes depending on the quality of connection. The system comprising a transmitter (20 of Fig.3) for forming fixed length radio link control (RLC) blocks (Fig.2), for forming fixed length coded sub-blocks (bursts in Fig.3) from the RLC blocks, and for configuring the coded sub-blocks into transmission units being capable of supporting link adaptation at multiple code rates. (note col.11 – col.12)

Regarding claim **2**, Schramm teaches all subject matter as applied to claim 1. Schramm further teaches a receiver (a mobile station, 12 of Fig.3) receiving the transmission units (sent by the base station). The receiver includes a decoder for decoding the RLC blocks from the received transmission units as it is transmitted in an encoded RLC blocks (note col.6, lines 60-67).

Regarding claims **3** and **9,** Schramm teaches all subject matter as applied to claim 1. Schramm further teaches retransmitting at least one of the RLC blocks at a code rate which may be different from the code rate used for an initial transmission of the at least one of the RLC blocks. (note col.11 – col.12)

Regarding claim **4**, Schramm teaches all subject matter as applied to claim 3. And further, all limitations are explained in regards to claims 3 and 9.

Regarding claim **10**, Schramm teaches all subject matter as applied to claim 1. Schramm further teaches the transmitter adding block check sequence (BCS) (see RLC block in Fig. 4(a)) in order to check for errors in the information field. And further, by using the cyclic redundancy checking technique, the receiver evaluates the received RLC block. (col.3, lines 5-30)

Regarding claim **11**, Schramm teaches all subject matter as applied to claim 1. Schramm further teaches an adaptive rate transmitter forming coded sub-blocks (or bursts) by dividing into at least two to, which is dividing by variable value of 2.

Regarding claim **14**, Schramm teaches all subject matter as applied to claim 13. Schramm further teaches the step of configuring by adding cyclic redundancy check (CRC) sequences to the RLC blocks, as previously explained in regards to claim 10, and performing convolutional coding (note col. 2, lines 55 – col.3, lines 4) on the RLC blocks and the CRC sequences to generate encoded RLC blocks.

Regarding claim **15**, Schramm teaches all subject matter as applied to claim 14. Schramm further discloses the limitation of performing convolutional coding with code rate of 1/3. (note col. 2, lines 55 – col.3, lines 4)

Regarding claim **16**, Schramm teaches all subject matter as applied to claim 14. Schramm also further discloses the limitation of step of interleaving the encoded RLC blocks. (note col.3, lines 5-23)

Regarding claim **17**, Schramm teaches all subject matter as applied to claim 14. Schramm teaches and shows segmentation of encoded RLC blocks into sub-blocks. Then, the groups of the coded sub-blocks (or bursts) are assembled to form the transmission units. (see Fig.4(a))

Regarding claims **19** and **31**, Schramm teaches all subject matter as applied to claim 17. Schramm teaches transmission units sent over GSM bursts. Schramm's teaching is also used in the general packet radio services system. (note col.1, lines 20-37)

Regarding claims **20** and **21**, Schramm teaches all subject matter as applied to claim 17. Schramm discloses in Fig.4(a) and Fig.4(b) where there are 4 sub-blocks during the first transmission and 8 sub-blocks during the retransmission. The modulation technique is different between the two, and the code rate as well is implement differently. (note col.11 – col.12)

Regarding claim **30**, Schramm teaches all subject matter as applied to claim 17. And further, Schramm teaches configuring step of forming at least two of the transmission units of an unequal number of coded sub-blocks. Fig.4(a) has 4 sub-blocks, while Fig.4(b) displays 8 sub-blocks transmitting in different code rate.

Claim Rejections - 35 USC § 103

3. Claims **25-26** and **32-41** are rejected under 35 U.S.C. 103(a) as being unpatentable over Schramm et al. (`663) in view of Trompower et al. (`124).

Regarding claims **25** and **32**, Schramm teaches a wireless communication system (21 of Fig.3) being capable of supporting link adaptation between multiple code rates and incremental redundancy, as belonging to a well-known ARQ family. (col.6, lines 60-66) As previously explained above in regards to claims 1 and 13, Schramm discloses method steps of forming fixed length RLC blocks (Fig.2). Furthermore, combining the RLC blocks with a cyclic redundancy check sequence for error detection to form error coded RLC blocks is shown also in Fig.2 as BCS. Block check sequence (BCS) is used by the receiver to check for errors in the information field (note col.3, lines 16-18). The receiver implements cyclic redundancy check technique to evaluate the received signal (note col.3, lines 25-27). Figure 2 further details processing the error coded RLC blocks to form coded sub-blocks (or bursts), assembling groups of the coded sub-blocks (or bursts) into transmission units based on the multiple code rates (see Fig.4(a)). However, Schramm does not teach forming of a header indicative of the transmission units based on multiple code rates. Schramm does disclose RLC blocks containing a BH (block header) portion, but does not disclose the content. Trompower teaches implementation of a header in a frame containing code rate information, (note col.16, lines 24-35, see 302 of Fig.3A). As the transmitter may be able to send signal with different code rates, it would have been obvious to one skilled in the art at the time of

invention to include code rate data in the header frame (BH of Fig.2 of Schramm) for the purpose of notifying the receiver of the data rate transmitted and effectively receive the sent data.

Regarding claim **26**, Schramm in view of Trompower teaches all subject matter as applied to claim 25. Schramm further discloses frame with a header (BH) transmitted with the transmission units. (see Fig.4(a))

Regarding claim **33**, Schramm in view of Trompower teaches all subject matter as applied to claim 32. Schramm further teaches performing convolutional coding (note col. 2, lines 55 – col.3, lines 4) on the RLC blocks to generate encoded RLC blocks.

Regarding claim **34**, Schramm in view of Trompower teaches all subject matter as applied to claim 33. Schramm further discloses the limitation of performing convolutional coding with code rate of 1/3. (note col. 2, lines 55 – col.3, lines 4)

Regarding claim **35**, Schramm in view of Trompower teaches all subject matter as applied to claim 33. Schramm also further discloses the limitation of step of interleaving the encoded RLC blocks. (note col.3, lines 5-23)

Regarding claim **36**, Schramm in view of Trompower teaches all subject matter as applied to claim 35. Schramm teaches and shows segmentation of encoded RLC blocks into sub-

blocks. Then, the groups of the coded sub-blocks (or bursts) are assembled to form the transmission units. (see Fig.4(a))

Regarding claim **37**, Schramm in view of Trompower teaches all subject matter as applied to claim 36. Schramm teaches transmission units sent over GSM bursts.(note col.1, lines 20-37)

Regarding claim **38**, Schramm in view of Trompower teaches all subject matter as applied to claim 36. And further, Schramm teaches configuring step of forming at least two of the transmission units of a different number of coded sub-blocks. Fig.4(a) has 4 sub-blocks, while Fig.4(b) displays 8 sub-blocks transmitting in different code rate.

Regarding claim **39**, Schramm in view of Trompower teaches all subject matter as applied to claim 38. Schramm further discloses transmission of modulation using phase shift keying (PSK) as QPSK belongs to the same family of PSK. (see Fig.4(b))

Regarding claim **40**, Schramm in view of Trompower teaches all subject matter as applied to claim 38. Schramm further discloses transmission of modulation using gaussian minimum shift keying (GMSK) as one of common modulation type. (note col.1, lines 20-36)

Regarding claim **41**, Schramm in view of Trompower teaches all subject matter as applied to claim 32. Schramm further teaches retransmitting at least one of the RLC blocks at a code

rate which may be different from the code rate used for an initial transmission of the at least one of the RLC blocks. (note col.11 – col.12)

4. Claims **5, 8** and **22** are rejected under 35 U.S.C. 103(a) as being unpatentable over Schramm et al. (`663).

Regarding claims **5, 8** and **22**, Schramm teaches all subject matter claimed, as applied to claim 2, 3 or 17. However, Schramm does not teach wherein the adaptive rate transmitter retransmits only a portion of a transmission unit including the at least one RLC block. It would have been obvious to one skilled in the art at the time of invention to implement transmission of only portion of transmission units rather than retransmission of whole data for the purpose of better throughput. As unnecessary data are not retransmitted, transmitter may be available to transmit the next undelivered data rather than being tied up to resend already received data.

Allowable Subject Matter

Claims **6-7, 12, 18, 23-24, 27-29,** and **42-44** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam K Ahn whose telephone number is 703-305-0754. The examiner can normally be reached on Mon-Fri 9am - 6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 703-305-4714. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4700.

SKA
October 30, 2002

STEPHEN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600